

REMARKS

Claims 1-8 are in the case and stand rejected under 35 USC § 102 over USPN 6,027,669 to Miura et al. Claims 1-2 and 5 are rejected under 35 USC § 103 over USPA 2001/0000912 to Kambe et al. The rejections are respectfully traversed. Reconsideration and allowance of the claims are respectfully requested.

COMMENTS ON REJECTIONS

The examiner asserts that water is inherently chemically abrasive to a layer on substrate because water is a corrosive substance, and that the limitation as recited in the present claims that, “the electrically conductive fluid being chemically abrasive to the layer on the substrate,” does not cause the claims to patentably define over the cited references. Applicants respectfully disagree. Applicants assert that the “chemically abrasive” nature of water as relied upon by the examiner is not the same as the chemically abrasive electrolyte as used in the claims – as understood by a person of ordinary skill in the art of integrated circuit fabrication or as defined in the specification.

The specification states the following in regard to the chemical abrasiveness of the electrolyte (emphasis added):

“The abrasive electrolyte 26 is *different from a standard chemical mechanical polishing solution* or rouge in a variety of important respects. For example, the abrasive electrolyte 26 is designed to be both electrically conductive and mechanically abrasive. The abrasive electrolyte 26 may also be *chemically abrasive* to some degree.” Paragraph [0033]

Thus, the specification states that the properties of the abrasive electrolyte with respect to (1) electrical conductivity, (2) mechanical abrasiveness, and (3) chemical abrasiveness are all different from those of standard chemical mechanical polishing solutions or rouges. The specification also reads (emphasis added):

“Although some chemical mechanical polishing solutions may be *water based*, or based on some other electrically conductive fluid, the abrasive electrolyte 26 is different from these solutions” Paragraph [0034]

Thus, the specification acknowledges that there are many polishing solutions that are water based, and yet the phrase as used in the specification and claims makes an abrasive electrolyte solution different from standard water-based solutions – regardless of whether the water in such solutions is considered to be corrosive. Therefore, a solution that merely relies upon any perceived corrosive properties of water is not within the scope of an “abrasive electrolyte,” as the term is defined in the specification.

In addition, water is almost universally used in the integrated circuit fabrication industry to clean integrated circuit substrates, and also to stop the reactions that are occurring on such substrates. It is neither used as nor considered to be a corrosive solution. As a specific example, Miura et al. devote an entire paragraph at the top of column 4 to describing water, where it is essentially stated that water is water and it doesn’t make any difference what kind of water is used. But Miura et al. never describe water as being corrosive.

Thus, while water might be considered as corrosive in some fields of endeavor, it is not considered to be so in integrated circuit fabrication. As the claims are to be interpreted according to the knowledge of one skilled in the relevant art of integrated circuit fabrication, water would not qualify as a chemically abrasive fluid. Therefore, the claims patentably define over the cited references, as described in more detail below.

CLAIM REJECTIONS UNDER §102

Claims 1-8 are rejected over Miura et al. Independent claim 1 claims, *inter alia*, an electrically conductive fluid that is substantially free of materials that are reactive within a desired operating voltage potential range and substantially free of materials that inhibit desired reactions within the desired operating voltage potential range, ***the electrically conductive fluid being chemically abrasive to the layer on the substrate***, and abrasive particles having a size that is small enough for the particles to substantially remain in suspension in the electrically conductive fluid and is large enough for the particles to provide a desired degree of erosion of the layer on the substrate when the abrasive electrolyte solution is forced against the layer on the substrate.

Miura et al. do not describe a fluid that is chemically abrasive to the layer on the substrate. Thus, claim 1 patentably defines over Miura et al. Reconsideration and

allowance of claim 1 are respectfully requested. Dependent claims 2-8 depend from independent claim 1, and contain additional important aspects of the invention. Therefore, dependent claims 2-8 patentably define over Miura et al. Reconsideration and allowance of dependent claims 2-8 are respectfully requested.

CLAIM REJECTIONS UNDER §103

Claims 1-2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kambe et al. Independent claim 1 claims, *inter alia*, an electrically conductive fluid that is substantially free of materials that are reactive within a desired operating voltage potential range and substantially free of materials that inhibit desired reactions within the desired operating voltage potential range, *the electrically conductive fluid being chemically abrasive to the layer on the substrate*, and abrasive particles having a size that is small enough for the particles to substantially remain in suspension in the electrically conductive fluid and is large enough for the particles to provide a desired degree of erosion of the layer on the substrate when the abrasive electrolyte solution is forced against the layer on the substrate.

Kambe et al. do not describe a fluid that is chemically abrasive to the layer on the substrate. Thus, claim 1 patentably defines over Kambe et al. Reconsideration and allowance of claim 1 are respectfully requested. Dependent claims 2 and 5 depend from independent claim 1, and contain additional important aspects of the invention. Therefore, dependent claims 2 and 5 patentably define over Kambe et al. Reconsideration and allowance of dependent claims 2 and 5 are respectfully requested.


CONCLUSION

Applicants assert that the claims of the present application patentably define over the prior art made of record and not relied upon for the same reasons as given above. Applicants respectfully submit that a full and complete response to the office action is provided herein, and that the application is now fully in condition for allowance. Action in accordance therewith is respectfully requested.

In the event this response is not timely filed, applicants hereby petition for the appropriate extension of time. If any fees are required by this amendment, such fees may be charged to deposit account 12-2252.

Sincerely,

LUEDEKA, NEELY & GRAHAM, P.C.

By: 

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